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TREND OF THE COLLEGE RECRUITMENT PROGRAM FOR BLACK ENGINEERS AT THE U.S. ARMY MISSILE COMMAND

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U.S. ARMY MISSILE COMMAND
Redstone Arsenal, Alabama 35898-5000

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The trends of the U.S. Army Missile Command's Centralized College Recruitment Program success in attracting black engineers and scientists into the Federal workplace is reviewed. Recruitment results for a 10-year period, FY 78 through FY 88, are compared. Provided are some of the difficulties encountered in the Federal recruitment of engineers and scientists, and some Government efforts to help offset these recruitment difficulties. Various threats to internal validity of organizational research, such as this report, are discussed.

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I. INTRODUCTION

The Federal Government, when considered as one employer, is by far the Nation's largest employer. According to the U.S. Department of Labor, the Federal Government employed 2,984,000 persons as of March 1989. (Employment situtation Press Release, 1989, Bureau of Labor Statistics, U. S. Department of Labor)

Federal employees are involved in both non-defense and defense occupations. Both Federal military and civilian recruitment officials find themselves in direct competition with private industry for workers in most all occupational categories. Recruitment of well qualified individuals, for difficult to fill positions, is made more acute by the fact that private industry salary rates are often more lucrative, especially for entry level positions.

The change in the United States from an agricultural to an industrial society has placed more expectations on the Federal work force. This change has resulted in sweeping legislation at the national level that requires more Federal involvement in many areas of society. Partly from the trauma of entering World War II unprepared and partly from the world conditions since the end of the war, leading statesmen from both political parties have been committed to a strong national defense. Since 1945, the U.S. has expended considerable effort and large sums of money for the research, development, and production of new and highly sophisticated weaponry. Large expenditures of money for defense purposes have been necessitated by the rapid advancement of technology, huge monetary expenditures by countries viewed as unfriendly, economic and political instability in many parts of the world, and the emergence of third world nations.

Beginning in the early 1960's, U.S. manufactures found themselves competing on a global scale for U.S. customers, as well as foreign customers, that at one time could be taken for granted. This increased competition along with continuing technological advances in most all areas have caused a heavy and continuing demand for professional engineers. The shortage of engineers has, at times, almost reached a critical stage. Earlier in this century, many innovative scientific ideas and inventions came from small individually owned laboratories or shops; however, the cost of equipment and large overhead costs have practically eliminated the small independent researcher.

Aggressive recruitment of engineers by private industry who offer more fringe benefits and a higher rate of pay than the Federal Government, particularly at the entry level, cause the Government continuing difficulty in the recruitment of engineers. During the 1960's, in an attempt to place the Federal Government in a more competitive recruitment position, the Office of Personnel Management (OPM) approved an increased rate of pay in grades GS-5 through GS-12 for engineers and scientists. In spite of the special pay rate, positions often went unfilled for long periods of time. In a further attempt to improve recruitment efforts and to streamline the system, Federal agencies were granted direct hire authority in the appointment of engineers and scientists. Direct hire authority grants Federal agencies the authority to accept and rate applications on the spot for certain hard to fill engineering and scientist positions. While both of the above initiatives were a step in the right direction, the problem of attracting sufficient numbers of high quality engineering candidates was not eliminated.

In a further effort to resolve the problem of recruiting engineers, a decision was made by the U.S. Army Missile Command to initiate a centralized engineering recruitment program by contacting colleges in surrounding states. Particular emphasis was placed on contacting historically black colleges.

The recruitment data (grades GS-5 and GS-7) for the first three years of the recruitment program was gathered, analyzed, and compared with the previous three years (previous three-years represented the only recruitment data available) in order to measure the program impact for recruitment of black engineers. The results of this study are reported in Technical Report CPO-85-3 [1] (program effectiveness comparison appears in Table 1 of the referenced report). The Government's continuing difficulty of recruiting engineers, particularly blacks, into the work force presents a realistic need to evaluate the recruitment program. Four additional years of recruiting data, since the last engineer recruitment study, provides the opportunity to further assess the effectiveness of the centralized college recruitment program.

II. U.S. ARMY MISSILE COMMAND

The U.S. Army Missile Command (MICOM), located on Redstone Arsenal, is a 39,000 acre military reservation in Madison County, Alabama, responsible for the total life-cycle management of all Army missile systems. Total life-cycle management includes research, development, production management, procurement, quality assurance, maintenance, and logistics support to U.S. troops and foreign governments that have purchased Army missile systems. In excess of 7,000 civilian and approximately 1,000 military employees are assigned to this Command.

III. PERSONNEL MANAGEMENT WITHIN THE FEDERAL GOVERNMENT

Prior to passage of the Civil Service Act in 1883, the Army filled special personnel needs by recruiting directly from the civilian population by utilizing whatever contract terms that were available. Many times political and personnel connections determined who would be hired. Each time a new president took office there was a widespread turnover in personnel. This system of recruitment became known as the Spoils System. The Civil Service Act of 1883 established the Civil Service Commission which was charged with establishing a merit system and ending political patronage. Early emphasis in personnel management was more of ensuring that agencies refrain from certain activities rather than developing and applying an effective personnel management program.

Overall administration of the Federal personnel program is the responsibility of the Office of Personnel Management (OPM). OPM is headquartered in Washington, D.C. and has regional and area offices scattered throughout the country. According to the Comptroller General's report [2], OPM, during Fiscal Year 78, spent about $35.4 million on examinations and referrals of applicants, procesed 1.6 applications, and referred 1.1 million applicants to Federal agencies from which 152,771 selections were made.

Inherent in the responsibilities of the OPM is to hold open, competitive examinations of applicants for competitive service appointments. These examinations were to be based on merit, practical in character and, as far as possible, be directly related to the position being filled. Beginning in the 1960's, examination procedures used by employers, including OPM, began to come under increasing criticism from various groups within society. OPM has continued to rely on the use of both assembled and unassembled examination procedures. Assembled examinations require applicants to report to examination centers where batteries of exams are administered which test skills and knowledges in certain subject areas. Some occupational groupings do not require an assembled exam but, instead, require the submission of an application for employment which is rated and assigned a numerical score based on information submitted.

IV. EQUAL EMPLOYMENT OPPORTUNITY

See Technical Report CPO-85-3 [1], or a discussion and review of the Equal Employment Opportunity (EEO) program.

V. RECRUITMENT OF ENGINEERS AT THE U.S. ARMY MISSILE COMMAND

The U.S. Army Missile Command's primary mission at Redstone Arsenal is scientific in nature. This results in the Engineer and Scientist Career Program, with approximately 1500 members, being the largest career program at Redstone Arsenal.

An aging workforce plus continued emphasis on highly technical, state-of-the-art programs has increased the need for engineers within the MICOM Organization at Redstone Arsenal. Recruitment of highly qualified engineers into the Federal sector has always been challenging due to the varied restraints placed on Federal employment. This challenge has been further intensified by the competition from private industry for the same type and caliber of candidates. The emphasis placed on the programs of centralized college recruitment and EEO for recruitment of minority groups at Redstone Arsenal has shown positive results in attracting a larger number of black engineers into the MICOM Organization.

VI. DISCUSSION

While the approval by OPM of an increased rate of pay for engineers and scientists and the granting of direct hire authority to agencies undoubtedly helped agencies to attract and retain engineers, the U.S. Army Missile Command continued to experience difficulty in attracting sufficient numbers of young engineers. In times of great need during the 70s, sporadic visits were made to various colleges in an effort to attract young engineers. However at that time, no concentrated college recruitment program had been developed and utilized.

After a thorough assessment of recruitment needs, a decision was made at MICOM in the spring of 1981 to initiate a formal college recruitment program for engineers and scientists. The recruitment effort was to be coordinated by the Recruitment and Placement Division of the Civilian Personnel Office with technical recruitment assistance from the Army Missile Laboratory of the U.S. Army Missile Command. Fifty to 80 entry level positions (GS-5 and GS-7) were to be set aside each year to be utilized for the recruitment, placement, and training for engineering graduates. Engineering colleges at varying locations throughout the country were targeted for scheduled recruitment visits. Special emphasis was placed on predominantly black engineering colleges, e.g., Tennessee State University, Tuskegee Institute, for at least one and possibly two recruitment visits each year. These visits were to be continued, even during recruitment austerity periods, to familiarize school faculties and students with the U.S. Army Missile Command and its' mission.

To determine the effectiveness of the centralized college recruitment program in recruiting black engineers, data were gathered from the U.S. Army Missile Command's automated data bank. The data reflects a 6-year recruitment period (Table 1). The first 3 years of the program included data from October 1981 through September 1984, and the 3 years prior to the implementation of the centralized college recruitment program covered the period from September 1978 through September 1981.

TABLE 1. MICOM Recruitment of Black Engineers and Female Engineers in Grades GS-5 and GS-7 from Oct 1978 to Oct 1984.

Year	N Black	N Female	Total
Prior to implementation			
October 1978-September 1979	0	1	1
October 1979-September 1980	0	1	1
October 1980-September 1981	2	3	5
Total	2	5	7
Following Implementation			
October 1981-September 1982	5	7	12
October 1982-September 1983	5	9	14
October 1983-September 1984	5	14	19
Total	15	30	45

As the figures in Table 1 depict, the total number of black engineers, grades GS-5 and GS-7, increased from 2 for the 3-years prior to implementation of the centralized college recruitment program to 15 for the first 3-years of the program. This increase of 13 appointments equates to a 650+ percent improvement for the recruitment of black engineers at MICOM.

The time frame October 1978 through September 1981 represents the only period prior to the implementation of the centralized college recruitment program that is available for comparison and analysis of the program's recruitment data. Studies of this nature are enhanced by the utilization of longitudinal data to help verify whether or not the results, indicate a trend. Data in Table 2, for 4 additional years, shows a slight overall drop in the average number of black engineers recruited each year (3.75 per year as compared to 5 per year for the first 3 years of the program. Even though there has been a decline in the average number of black engineers recruited each year, the trend is still positive when compared to the period prior to implementation of the centralized college recruitment program. Additionally, the fact that the MICOM recruiters are continuing to visit schools that train black engineers is an indication of a strong committment for their recruitment.

TABLE 2. MICOM Recruitment of Black Engineers and Female Engineers in Grades GS-5 and GS-7 during Fiscal Year 1985 through Fiscal Year 1988.

Year		N Black	N Female	Total
Fiscal Year 1985	85	2	11	13
through	86	4	12	16
Fiscal Year 1988	87	7	22	29
	88	2	11	13
Total		15	56	71

VII. RESEARCH SIGNIFICANCE

Any society needs organizations that function effectively. The more industrially advanced our society becomes, the more important it is that we be able to measure organizational effectiveness [3].

Unfortunately, social scientist and organizational behavior experts are not able to utilize the strict control available to the physical scientist. In an organizational setting, it is usually not possible to check and recheck conditions and to insure that results are not contaminated by outside influences.

Admittedly, organizational research would be enhanced if it were possible to more closely follow the scientific model. In spite of admitted weaknesses such as ambiguity, lack of comparable information, inability to regulate, lack of concrete evidence, etc., there still exists a continuing need to conduct organizational research.

Campbell [4] addresses the various threats to internal and external validity that may confound studies of the nature addressed in this technical report. Since the data used in this report is archival in nature, history, one of the threats to internal validity, is the only one addressed. While some of the other threats could possibly have a confounding influence, their effect is viewed as minimal. Historical occurrences which may have influenced results of the 10-year period of this study are:

o Change in Engineering and Scientist graduates' attitude toward Department of Defense.

o Set aside of spaces (50 to 80) may have caused additional management focus on the filling of these particular vacancies.

VIII. IMPLICATIONS

As discussed earlier organizations and organizational behavior cannot be researched under the same conditions nor with the same assurances that scientists are able to perform research in the laboratory. Sprinthall [5] raises the question concerning the fundamental impossibility of expecting a human being to become objective about human beings. Rosenthal [6] has unearthed literally hundreds of studies documenting this self-fulfilling prophecy. Fortunately, studies utilizing archival data, such as the study described in this paper, are not as subject to researcher bias. Admittedly, it is somewhat difficult to determine whether the findings can be generalized. There is no guarantee that a similar recruitment intervention will have the same effect in a different organization. Murvis [7] states, "To appraise generalizability, the researcher must consider the context in which the data were found and gathered to determine whether the people, groups, technology, or arrangements found in the organization make the findings unique and limit the generalization to other settings."

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